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JPRS 84051

5 August 1983

# Worldwide Report

TELECOMMUNICATIONS POLICY,  
RESEARCH AND DEVELOPMENT

No. 282

19990624 063

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FOREIGN BROADCAST INFORMATION SERVICE

REPRODUCED BY  
NATIONAL TECHNICAL  
INFORMATION SERVICE  
U.S. DEPARTMENT OF COMMERCE  
SPRINGFIELD, VA. 22161

Distribution Statement  
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TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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## KIRIBATI

### BRIEFS

COMMUNICATIONS CENTER IN KIRIBATI--Work started on a big communication centre for Kiribati. The centre will include an earth-satellite station and an automatic telephone system. It will cost nearly two-million dollars and is being paid for by the European Economic Community. When it is finished, the communications centre will mean that telephone subscribers all over Kiribati can call to any part of the world at any time of the day or night.  
[Text] [Honiara SOLOMON STAR in English 6 Jul 83 p 22]

CSO: 5500/4355

## CUT IN RATES FOR SATELLITE TRANSMISSION

Kuching SARAWAK TRIBUNE in English 23 Jun 83 p 1

[Text]

Kuala Lumpur, Wed. — Malaysia today introduced a substantial cut in the tariff rate for satellite transmission and reception of television programmes, making it the cheapest in this part of the world.

Energy, Telecommunications and Posts Minister Datuk Leo Moggie, who made the announcement in a statement here, said the current rate of \$2,000 for the first 10 minutes would be reduced to \$1,500 with the charge for each additional minutes down from \$60 to \$40 from today.

The reductions show a 25 per cent and 33 per cent cut respectively.

With the latest cuts, Malaysia's new tariffs for the transmission and reception of TV programmes for occasional use via satellite will be

equivalent to US\$592.88 for the first 10 minutes and US\$15.76 for each additional minute.

The rates in other Asean countries are: Indonesia, US\$850.00 for the first 10 minutes and US\$30.00 for additional minute; Thailand US\$700 and US\$21, the Philippines US\$955.37 and US\$46.38 and Singapore US\$651.20 and US\$18.61.

The rates in other countries are: Australia - US\$834 and US\$38.92; Hong Kong - US\$693 and US\$23.10; Italy, US\$906.50 and US\$31.50; Japan - US\$788.30 and US\$27.59; and United Kingdom - US\$670 and US\$19.70.

Datuk Moggie hoped that the tariff reduction should encourage more sponsors to come forward to sponsor popular television programmes.

He said the government was also introducing tariffs for con-

tract rate at 600 for the first 10 minutes and 30 for each additional minute.

Conditions imposed for contract television programmes are:

- The contract shall be on a yearly basis.
- the minimum duration (minimum charge) will be 10 minutes a day.
- the minimum reception: transmission will be 25 times a month with a minimum of 10 minutes each time, and that
- transmission must be between the same two points and in one direction only. If the contract is for transmission, no reception will be allowed. Similarly no transmission will be allowed for contract signed for reception.

CHILE

BRIEFS

ENTEL, ECOM SIGN AGREEMENT--Chile will become the first South American country to incorporate modern computer technology via satellite in the business field when the agreement between the National Telecommunications Enterprise (ENTEL) and the National Computer Enterprise (ECOM) was signed. The agreement on technical cooperation was signed by the director of ENTEL Chile, Lieutenant Colonel Gerson Echavarria, and the director general of ECOM, Leandro Sanhueza. Through the agreement ENTEL places its international communications network at ECOM's disposal. It will serve in communicating and transmitting needed information from various data banks which exist in this country and abroad. Reportedly through the contract we are connected via ENTEL to ECOM with the North American enterprise TELENET for the purpose of transmitting processed information on economic, social, sports and other subjects to all enterprises and users needing it. Data which will be sent via TELENET will be transmitted instantaneously and promptly over the ENTEL network and will come into offices owned by ECOM in Santiago. Here in the capital users who apply for the service will receive their information on their respective computer screens or via recording. During the hookup ceremony, the ENTEL director general emphasized the convenience of this new system for all businesses which will see their information costs significantly reduced. Leandro Sanhueza said that through the system, Chile assumes a position in the forefront of computerized communications via satellite. [Text] [Santiago LA NACION in Spanish 29 Jun 83 p 7 A] 9436

CSO; 5500/2084



## BRIEFS

TELEX EQUIPMENT IMPORTS--New Delhi, June 1--The P and T department has placed orders for the import of equipment as part of modernisation of telex services, to provide electronic exchange links to 11,700 subscribers. The telex network so far consisted of indigenously-designed equipment. The imported equipment is ordered for the zonal exchanges at Delhi, Bombay, Calcutta and Madras. Transit routing is provided by the telex exchange in Bombay, Delhi, Calcutta and Madras and all the telex exchanges of each zone are connected to these centres. There are 169 telex exchanges in the country with an installed capacity of about 25,000 lines. The recently commissioned stored programme controlled (SPC) electronic telex exchange at Prabhadevi (Bombay) was the first of these telex electronic exchanges. All the 52 stations of the western zone are linked to this exchange in Bombay. The SPC telexes at New Delhi, Calcutta and Madras are in different stages of installation and will be progressively commissioned this year. The special features available on the SPC electronic telex exchange include keyboard signalling, print service signals on the call disposal, detailed call record storage in the exchange for charging purposes, abbreviated dialling; quick line or hot line facility; automatic advice of chargeable duration; multi-address calls to reach up to eight called parties simultaneously, delayed delivery service, to store and forward the messages in case of connection to the called party cannot be established and automatic test facilities for measuring the teleprinter margins. [Text] [Bombay THE TIMES OF INDIA in English 2 Jun 83 p 5]

CSO: 5500/7143

## PAKISTAN

### BRIEFS

TV COVERAGE INCREASE--An accelerated development programme will be undertaken during the Sixth Five-Year Plan for expansion of television signal in the far-flung areas of the four provinces and Northern Areas of Pakistan, official sources said. The programme calls for extension of television coverage to reach an additional population of 13 million by 1988, thereby opening up these areas in line with the new development strategy. This would be achieved by setting up seven rebroadcast centres boosters in Baluchistan, the NWFP, Sind and the Punjab and two TV links in Baluchistan. In addition, the TV Complex at Islamabad and a permanent colour TV station at Quetta will be completed and commissioned. The Sixth Plan proposes to increase the self-financing effort of the TV Corporation due to its improved profitability and potential for income generation. Out of the capital outlay of Rs. 494 million, Rs. 208 million will be contributed by the Government, mainly for implementation of non-viable projects located in Baluchistan and elsewhere, while Rs. 286 million will be raised as loans from the banking sector or by their retained earnings.--APP. [Text] [Karachi DAWN in English 27 Jun 83 p 10]

TELECOMMUNICATIONS LINK WITH PRC--The permanent telecommunication link along the Karakoram Highway up to Khunjerab Pass has been completed, establishing a telecommunications link between Pakistan and China. The project was completed by the special communications organization in the record time of 45 days. The 90-km link passes through some of the most difficult terrain and treacherous weather conditions. [Text] [Karachi Domestic Service in Urdu 5 Jul 83 p F 1]

CSO: 5500/4747

## YEMEN ARAB REPUBLIC

### FRENCH ASSISTANCE IN DEVELOPMENT OF TELECOMMUNICATIONS NETWORK

Paris TELECOMMUNICATIONS in French No 47, 1 Apr 83 pp 34-39

[Article based on information provided by Louis Rambaud: "North Yemen at the Time of 'Earth-Based Communications'"]

[Excerpts] Seven hundred telephone lines in 1970; 10,000 in 1975; 100,000 in 1986... This considerable development of telephone in North Yemen is due to a large extent to the excellent cooperation relations that exist between the French and Yemenite administrations.

A territory that was never colonized, the cradle of many Arab tribes, North Yemen is a small country about which there is not much to say: it does not have oil and its present regime is so stable that it does not arouse curiosity! This does not mean that nothing is going on there: after leaving behind the resentments born from a civil war, the Yemenites have undertaken to build a modern nation.

#### Telephone Exchanges

As far as telephone exchanges are concerned, the extensive expertise acquired by France in the field of earth-based communications made it possible to contemplate with confidence the establishment of communications of this type in a country that was still developing.

This choice of the Yemenite government, which could be considered adventurous in 1977, offered three advantages: first, it offered the possibility of making subsequent expansions, depending on economic development and demographic growth; ease of maintenance was also an essential factor as earth-based communications do not require a lot of personnel and it would take several years before the required technicians would be available in Yemen; finally, the small size of the buildings required made it possible to accelerate the implementation of the project by using prefabricated elements.

To be adapted to the demographic structure of the country, it soon became apparent that the network had to be articulated around three E-10-B exchanges in Sana, Taiz and Hodeidah, to which far away centers equipped with distant connecting units would be linked.

There are now 35,000 telephone lines; there will be 84,000 in 1985. A fourth E-10-B exchange is now being installed and will be placed into service in Sana late in 1983. This will free a number of circuits on the first exchange, which will be connected to the international network, in particular the Medarabtel network, and the number of telephone lines will be increased to 100,000 by 1986.

The maintenance personnel will be based at the data-processing center that is to be built in Sana and which will supervise the whole network. The Sana center will manage the main center in Taiz and the Hodeidah center, the latter two being equipped with teleprinter terminals that will make it possible to carry out operating tasks at local level.

Since early in 1982, FCR (France Cables and Radio), a subsidiary of the French Post and Telecommunications Administration, has been operating and maintaining the equipment and training local personnel "on the job," under an agreement signed with the Yemenite Ministry of Communications. This agreement, which was signed for three years, should enable the Yemenites to operate their network themselves starting in 1985.

#### Long-Distance Transmission Network: Coaxial Cables or Radio-Relay Systems

Cables are well suited to serve villages and small towns. But what had to be done was to interconnect three major towns located far from one another and separated by regions of tormented mountains. Therefore, most connections were made using radio-relay systems.

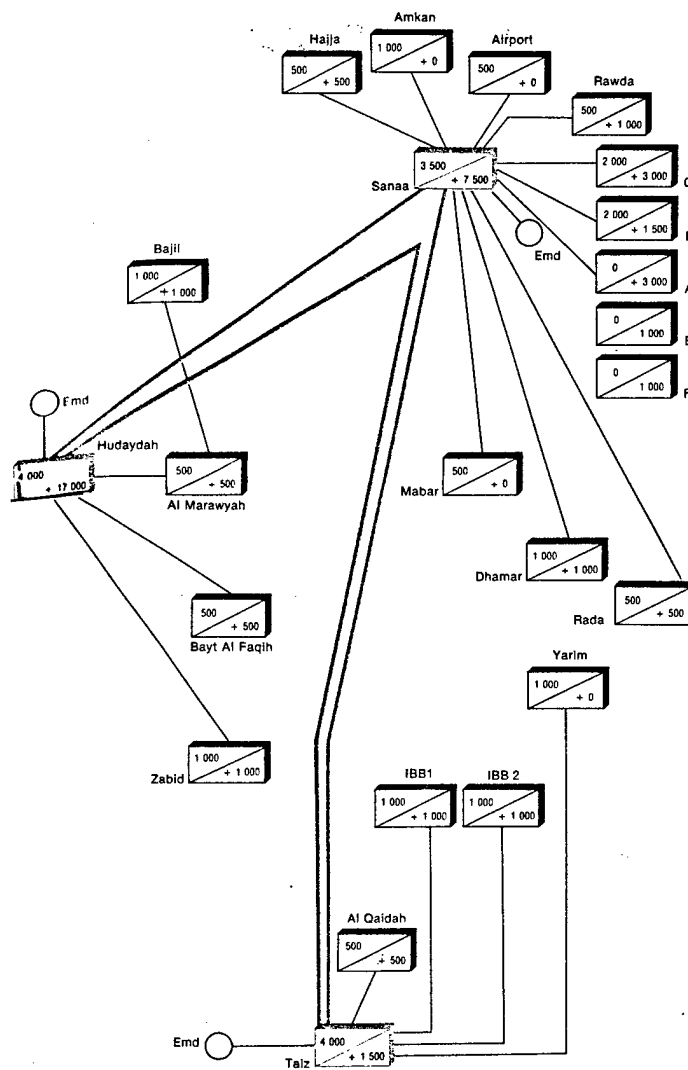
Thomson-CSF FH-665 analog equipment is used, in the 6 GHz band, and the modular design of this equipment makes its maintenance easy. The transmission capacity per channel is one TV program or 960 telephone links with a 1+1 bilateral organization on the Sana-Taiz and Sanaa-Hodeidah connections. On these connections, there are also direct Taiz-Hodeidah circuits going through Sana but are not demodulated there.

Another direct connection organized in 1+1 will soon be established between Hodeidah and Taiz; it will go through Djebel Yafus, Hays and Djebel Hurim and will close the Sana-Hodeidah-Taiz triangle although its path between the two latter towns will be different from that of the Hodeidah-Zabid coaxial cable. Taiz and the port of Mokha should also be connected to each other in the near future.

Other radio-relay systems, this time for Medarabtel, will also connect Saudi Arabia to Sana as well as Sana-Taiz, South Yemen and Djibouti.

Long-distance connections also use a 30-km coaxial cable between Bajil and Hodeidah, in the Tihama plain where the nature of the soil makes it possible to install such a cable. This section is equipped with a system operating on 12 MHz with coaxial cable pairs, and its capacity is 2,700 links (initially 900 links).

Primary energy is supplied by an independent electric power plant having a power of 45 KVA or 15 KVA (at sea level) which, considering the actual altitudes



- (1) Central E 10 B  
4 800 : abonnés actuels  
+ 2 500 : abonnés prévus
- (2) Unité de raccordement d'abonnés (URA)  
2 000 : abonnés actuels  
+ 1 500 : abonnés prévus
- (3) Liaison par faisceau hertzien  
Liaison par câble  
Central électromécanique  
Emd

Key: 1. E-10-B exchange  
Number of lines: 4,800 now + 2,500 planned  
2. Line termination unit (URA)  
Number of lines: 2,000 now + 1,500 planned  
3. Radio-relay system connection  
Cable connection  
Electromechanical exchange

of the stations, corresponds to useful powers of 30 or 10 KVA respectively to supply TV transmitters and radio-relay system battery chargers.

### Regional Connections

As for regional connections, they also use Thomson-CSF FH-665 equipment, but in the 7 GHz band, the digital flow being 34 Mbit/s per channel. Thus, two regional networks were formed as radio-relay systems, that of Sana and that of Taiz. The former is organized in 1+1 from Sana to Amran, from Sana to Hijja and from Sana to Mabar, in 2+1 from Sana to Dhamar, then in 1+1 from Dhamar to Rada, with a common back-up between Sana and Dhamar. The digital flow is 8 Mbit/s per channel. The Taiz network is organized in 1+1 from Taiz to Yarim and in 2+1 from Taiz to Ibb.

The regional network around Hodeidah consists of composite cables, as the Tihama plain is well suited to the installation of this type of transmission support. However, on the Bajil-Hodeidah section the cable includes analog-system as well as MIC[pulse-coded modulation]-system pairs which connect Bajil to Al Marawiyah. The Bait al Faquih and Zabid connection units are also linked to the main center in Hodeidah.

For medium and short-distance connections with line-termination units requiring an average capacity (8 Mbit/s), digital technology was chosen both for radio-relay systems and for cables.

In 1977, the national telecommunications network of Yemen was practically non-existent and Yemenite authorities were faced with a difficult starting problem.

Energetic decisions, a large initial investment and an original "turnkey" approach to the project have made it possible to create in record time the essential structure of this network which uses the most modern technology, both with respect to switching and to transmission.

The case of Yemen is exemplary in several respects: it demonstrates to many developing countries that such an energetic operation can enable them to close rapidly the telecommunications gap from which they suffer; it also demonstrates the efficiency of the consortium of French companies and their ability to adapt themselves to the problems that must be solved.

### Cooperation between Yemen and France

On 16 February 1977, a technical cooperation agreement was signed between the Ministry of Communications of the Yemen Arab Republic and the French Post and Telecommunications Administration.

Under this agreement, the French administration was to help Yemen build its domestic network, among other things by assessing bids for equipment and quotations, checking the quantity and quality of the equipment supplied, its installation and performance, and finally by helping the Yemenite administration solve potential problems (such as spare parts supply).

As far as personnel training was concerned, France was to help in starting a training center, on the one hand by sending experts and equipment to Yemen, on the other hand by receiving Yemenite trainees.

The two parties agreed to meet every year, alternately in Sana and Paris, to review the work completed during the previous year and study programs for the next year.

In 1979, a permanent French cooperation mission was set up in Sana. Since 1982, emphasis has been placed on the computerization of telecommunication services: computerized telephone management similar to the French AGATE system (Automated Management of Telephone Lines), electronic directory, billing.

9294

CSO: 5500/4533

## BRIEFS

FRCN STATION FOR AKURE--The establishment of the Radio Nigerian Akure would provide the much needed alternative source of information, education and entertainment for the people of Ondo State. It would also afford them the opportunity to keep abreast of significant happenings outside the state. This assertion was made by the chairman board of governors Federal Radio Corporation of Nigeria, Chief Kola Ogungbade at the official commissioning of the Radio Nigeria Akure recently. With the establishment of this radio station he said, the citizens of the state are thus more closely integrated with the main stream of events in this country than before. Chief Ogungbade remarked that, the establishment of the station will also dispell rumours pedded by pessimists and detractors alike that the Federal Radio Corporation of Nigeria did not quite mean business in the state. Chier Ogungbade assured the people of the state that the Radio station will through its programmes and news forments become the radio of the people, for the people and run by the people. Also, speaking at the occasion, the zonal chairman, Federal Radio Nigerian Ibadan Dr. Kola Balogun congratulated the people of the state for the new "baby". He stressed that it was time to elivate the state which he said was one of the most enlightened states the country could boast of. Dr. Balogun said that the station was not established for politics alone but for enlightening, educating and entertaining the people of the state. He implored the people of the state to always tune to the station for better and refined programmes for their enjoyment. [Text] [Lagos DAILY TIMES in English 5 Jul 83 p 2]

OWERRI GETS FRCN STATION--The Federal Minister of Information, Malam Garba Wushishi yesterday commissioned the newly installed 50 kilowatts transmitter of Radio Nigeria at Azaraegbelu near Owerri. In his opening address, the minister traced the history of the FRCN in Imo State which he said was estab-lished in 1980, adding that the purpose was to meet the aspiration of the people of the state. The minister said that by the establishment of the station the Federal Government had fulfilled its promise to the people. The situation, he added, would provide job opportunities and development of the areas. Malam Wushishi said that there was an attempt to blackmail the station and main-tained that the establishment of the stations was to bring about positive change in the society. The present administration, he said, was committed to sustain the cultural heritage of the people through broadcasting. He charged journalists to maintain balanced news coverage and uphold high standard of the corporation with the aim of efficient modesty and impartiality. The



zonal board chairman of the FRCN Enugu, Mr. Ezeike, in his address said that the transmitting station could be heard all over Imo State. Other stations in the zone, he added, included Enugu Owerri, Calabar and announced that two other stations would be established at Port Harcourt and Benue very soon.  
[Text] [Lagos DAILY TIMES in English 4 Jul 83 p 5]

CSO: 5500/187

ZAMBIA

PRESIDENT KAUNDA COMMISSIONS MICROWAVE LINK

MB221933 Lusaka Domestic Service in English 1800 GMT 22 Jul 83

[Text] President Kaunda said in Mongu today that Zambia Broadcasting Services and the Post and Telecommunications Corporation should plan to work together to ensure smooth and speedy realization of the party's program on expanded communications. Dr Kaunda said this, when he commissioned the Lusaka-Mongu microwave link, with its associated telephone exchanges and regional radio and television transmitters.

The president said it was only through such concerted action of the implementing agencies, that the party could achieve its desired goal for the benefit of the people. The president said the party was determined to take television facilities down to the district level and the telephones to villages, in line with the slogan for the International Communications Union, which is: A telephone for every village. He said the party's aim was to rectify the imbalance between urban areas and rural areas. The president called on the young militants in the Posts and Telecommunications Corporation and the Ministry of Information and Broadcasting to move on the next region in the Luapula Province to provide microwave links and television services.

The president tested the telephone facilities by talking to other national leaders, including the party secretary general, Mr Humphrey Mulemba, and the prime minister, Mr Mundia.

CSO: 5500/189

FINNISH CITY BEGINS RECEIVING UK TV VIA OTS-2 SATELLITE

Helsinki UUSI SUOMI in Finnish 18 Jun 83 p 7

[Article: "Satellite Transmissions Begin in Lahti"]

[Text] Television programming composed of country music, a documentary describing the evolution of a volcano, and an English TV series brought the residents of Lahti into the age of satellite transmissions on Tuesday evening. The Paijat-Hame Telephone Company began the experimental reception of satellite programming by means of a large joint antenna in the area of Riihela, where satellite television programs were transmitted to approximately 500 households.

TV-programming made up of PLS programs from English Satellite Television will be seen in Riihela until the end of this year when it is expected that the satellite will cease to function. The experimental broadcasting will be free to the residents of Riihela.

The programming coming to Finland via the experimental satellite (OTS-2) of the Organization of European Postal and Telecommunications Administrations will be primarily composed of music, sports, and documentaries. The programming is in English and it will be offered 2 hours every evening.

Similar experiments are presently being conducted in Helsinki, Turku, and Rovaniemi.

10576

CSO: 5500/2741

SIEMENS OPTOELECTRONIC COMPONENTS FOR COMMUNICATIONS

Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German  
18 May 83 p 5

[Article: "Fiber Optics Technology in Chip Format"]

[Text] Siemens AG, Munich/Berlin. Future communication networks will be transmitting also colored motion pictures such as the party on the other end of a telephone conversation, TV programs from neighboring countries or films from video libraries, according to Siemens. Cables with glass fibers as light conductors offer the required broad bandwidth and low damping. According to the Munich concern, existing optical components such as transmitters, fibers, receivers and connectors will first have to be made cheaper, and secondly more reliable before glass-fiber networks will be broadly employed. For this the Siemens laboratories have developed transmitting and receiving modules as well as wave-length-selective connectors which can separate broad-band signals at the highest bit rates from each other.

Today, in present communication networks, glass-fiber cables are already transmitting telephone conversations, video signals and data over several trunk lines. Comfortable telephone use; new communication services such as CRT text and teletex; stereo radio programs and above all broadband communication with motion pictures and other state-of-the-art technology optical components are being tested (starting in 1983) by the German Federal Post Office in system tests of BIGFON (Broadband Integrated Glass-Fiber Local Network) in 12 network islands, two of which were built by Siemens in Berlin and Munich.

In Siemens' opinion, glass fibers are already well developed with regard to transmission characteristics. The reasonably priced multimode fibers supplied primarily for local area networks have an attenuation of 1 to 3 dB per km, depending on light wavelength, and will generally not require an amplifier between the relay station and the customer. Monomode fibers with an attenuation of less than 1 dB per km make possible a 20 km spacing between amplifiers at a transmission rate of 565 megabits per second. As a result, about 16 TV programs or 8,000 telephone conversations can be transmitted simultaneously. With present-day coaxial cables using copper wires, an amplifier is required every 1.5 kilometers

for transmitting an equal number of telephone conversations. In Siemens' research, monomode fibers for a wavelength of 1,300 nm with an attenuation of between 0.4 and 0.6 dB per km can be drawn reproducibly. Future development in the area of glass-fiber cables is aimed at reducing the cost of fabricating fibers into cables, reports Siemens.

Further research and development work in the Siemens laboratories is aimed at producing new optical components and at improving the reliability and lowering the cost of currently available components. The transmitters in glass-fiber networks are laser diodes and light emitting diodes. The wavelength of 880 nm was chosen at the beginning of the work on glass fibers since there the fibers have relatively low attenuation and because GaAlAs was already available as a semiconductor material which emits light in this domain. Siemens laboratories report that they have achieved an extrapolated life of more than 100,000 hours with these laser diodes which serves as an international bench mark; over this period the input power for the specified light output increases by 10 percent at most.

Since present-day fibers exhibit even lower attenuations at greater wavelengths--a characteristic which will be exploited for long-distance networks--it is a further objective of the laboratories to also develop reliable laser diodes with stable spectral properties to work in this regime. A suitable semiconductor material is (Ga, In) (As, P), a quaternary semiconductor which is considerably more difficult to work with than GaAlAs. Laser diodes suitably proportioned with these materials emit light in the domain around 1,300 nm. In the Siemens laboratories, these new diodes have already been operated for several thousands of hours without failure. LEDs for wavelengths around 850 and 1,300 nm are already completed, reports Siemens.

Junctions in optical networks serve to switch signals out of a trunk fiber to a receiver or to inject transmitter signals into a trunk fiber. Junctions were developed several years ago for multimode fibers; present effort here is focused on coming up with simpler and cheaper solutions. In the future it may be economical to increase the transmission capacity of a fiber of transmitting a broadband signal simultaneously on different carrier wave lengths. For mixing or separating, initially, two signals, Siemens laboratories are now developing wave-length multiplexers for monomode fibers; with these, two independent broadband signals could be transmitted simultaneously in the same or in opposite directions on only a single fiber. With an attenuation of less than 1.5 dB, these multiplexers are among the best available, thinks Siemens.

Siemens' researchers see significant potential for improving the components of optical communication systems with respect to space requirements, reliability and costs through integration of the individual optical, optoelectronic and electronic component elements. Their first step in this direction is confirming this belief: The laboratory version of a monolithic 880 nm transmitter module has been built on a single chip.

It combined a laser diode with a photodiode which serves as a monitor for controlling luminous power. As a receiver module for 1,300 to 1,500 nm, the photodiode of gallium-indium-arsenite and a low-noise field-effect transistor of gallium arsenite along with additional amplifying electronics were integrated of gallium arsenite along with additional amplifying electronics were integrated into a hybrid circuit for systems with bit rates of 34 and 140 megabits per second.

A greater degree of difficulty arises according to Siemens when large numbers of optical conductors fan in to conduct the light onto the chip. Siemens is working out theoretical and empirical principles for this. For physical reasons integrated optical circuits will not, however, achieve the component density of integrated semiconductor circuits because light cannot be transmitted around corners as easily as electrons in a conductor. Nonetheless, circuits of this type are required since they, among other uses, can later contribute--along with switching technology as it is used in the high-frequency regime--to fully exploiting the bandwidth potential of glass fibers.

9160

CSO: 5500/2746

PARTIES, STATE RADIO CHIEF SUPPORT LOCAL RADIO NET PLAN

Conservative Newspaper Backs Proposal

Helsinki UUSI SUOMI in Finnish 17 Jun 83 p 2

[Editorial: "Local Newspapers Are Right"]

[Text] The plans by local newspapers to establish local radio stations have encountered opposition as has been expected. However, this opposition has become somewhat uncertain. It is lacking that voice of Big Brother by which all attempts to break the monopoly on mass electronic communications have been rejected in the past.

The significance of private initiative is being disparaged as before by Assistant Judge Matti Anderzen and General Manager Sakari Kiuru of the state-owned Finnish Broadcasting Corporation. In Kiuru's opinion the area oriented transmissions of the Finnish Broadcasting Corporation should be sufficient for its listeners.

Local newspapers are aware of the activities of the Finnish Broadcasting Corporation in this area. As opposed to the local newspapers, the Finnish Broadcasting Corporation deals with "local broadcasting activities" in units of 100,000--300,000 listeners. The local newspapers are talking about local broadcasting reaching an actual audience of less than 100,000 at the most. The Finnish Broadcasting Corporation cannot and should not extend its activities to the level of the cities, municipalities, or villages.

The local newspapers, for their part, are close to their readers, the residents of the municipalities and villages. It is for this very reason that they are suitable for conducting such broadcasting activities. The Finnish Broadcasting Corporation is not able to compete at this level any more than the national or provincial newspapers are able to compete with local newspapers at the same level.

Communications Minister Matti Puhakka is prepared to reject local radio operations as a representative of his ministry. This is not at all surprising since the Communications Ministry has deemed fit as one of its most important tasks to oppose anything new in communications throughout the years as a representative of the Finnish Broadcasting Corporation.

Attention is now being directed toward Prime Minister Kalevi Sorsa, the chairman of the Social Democratic Party. As if anticipating the ideas of the League of Local Newspapers he proposed ideas foreign to the previous communications ideology of the SDP in his party's chief organ on 31 May. "Large countries and business firms will play a central role in regulating the future development of communications. The small will have to find their own place," stated Prime Minister Sorsa.

The SDP now has a unique opportunity to support the aspirations of the small, the purely local radio plans on the part of local newspapers.

The first round of the discussion is being conducted within the framework of a deliberate misunderstanding. It is being argued that there is no room for new stations within the network of existing radio frequencies. This is true if we are talking about the present local level of the operations of the Finnish Broadcasting Corporation, thus in practice large areas. On the other hand, there is sufficient room in practice for local stations with a limited range and output. These are what the local newspapers mean, and nothing else.

In Europe there are local radio systems in Sweden, Norway, France, England, Italy, and Yugoslavia, among other places. This development can be opposed in Finland, but it should be done on the basis of honest arguments.

It is time that the Finnish Broadcasting Corporation understood that its monopoly is not eternal and that local newspapers are not attacking the activities of the Finnish Broadcasting Corporation, but are talking about a municipality-level area within their own areas of circulation. The Finnish Broadcasting Corporation will not be able to use its age-old pretext, the fear of commercials. Local newspapers run advertisements, why not local radio?

Finally: one would think that local radio would interest the municipalities and local municipal leaders more than it would interest the national politicians in Helsinki promoting centralization.

#### Only Marxist-Oriented Party Opposes

Helsinki UUSI SUOMI in Finnish 17 Jun 83 p 9

[Article: "Parties Favorable to Local Radio Plan, Only Finnish People's Democratic League Opposed"]

[Text] The efforts being made by local newspapers to establish local radio stations is surprisingly enough being received positively by the political decisionmakers. The idea of local radio stations is not being directly rejected by any one of the ruling parties. Even among the larger opposition parties only the People's Democrats say that in principle they would rather see the development of the Finnish Broadcasting Corporation.

Not one of the ruling parties is completely rejecting the idea of local radio stations. The most cautious attitude toward the idea was taken by the Center



Party's Social and Health Minister Eeva Uuskoski-Vikatmaa, who at the same time stated that she is not very familiar with the issue and is thus avoiding any definite stand.

"Indeed, in principle the Center Party supports the idea of a free mass media, but even this requires certain limits and regulations. However, the possibility of local radio stations should be studied, and the matter is worthy of clarification," states Kuuskoski-Vikatmaa.

Liberal Party Chairman Arne Berner made a statement on Friday, in which he gave his support to the local radio plan and stated that it is necessary.

Among the ruling parties the local radio plan was supported without reservation by Chairman Veikko Vennamo of the Rural Party's parliamentary faction.

"We have always wanted to increase the local means of communication and we support the freedom of information. The first reaction to this plan is positive," states Veikko Vennamo.

At the same time Vennamo is amazed at Communications Minister Matti Puhakka's stand against local radio stations.

#### SDP Takes Positive Stand

Social Democratic Party Secretary Erkki Liikanen stated that the party has not yet officially discussed the local radio plan. Liikanen suggested that the question be referred to Lauri Sivonen, the party's information chief, who is more knowledgeable about communications issues and the party's position in principle and who also represents the party in the administrative organs of the Finnish Broadcasting Corporation.

Lauri Sivonen stated that the SDP has adopted a positive attitude toward radio operations of a local nature. However, Sivonen expresses slight reservations in stating that the questions regarding the conditions and objectives under which local radio stations will operate and the ownership and management of such stations are still open.

At the same time Sivonen points out that there must be continuous efforts to ensure the necessary conditions for the success of nationwide and area oriented programming.

"In any event, we are ready to discuss the question in a flexible manner in the Radio and Television Committee," promises Sivonen.

Also the Swedish People's Party is favorably disposed to the idea of local radio stations according to Ole Norrback, the chairman of its parliamentary faction. He points out that local cable television programming by voluntary efforts is already being implemented in the area of Pohjanmaa.

"If the same can be applied to radio, so much the better," states Norrback.

However, Norrback points out that the form and manner in which local radio operations are to be accomplished are yet to be deliberated.

#### Conservatives For, Finnish People's Democratic League Opposed

Among the opposition parties the Conservative Party has adopted a positive attitude toward the local radio plan according to Matti Jaatinen, the chairman of its parliamentary faction. Jaatinen states that the Conservative Party proceeds from the premise that since local newspaper operations can be carried out, local radio activities must also be allowed.

Chairman Kalevi Kivisto of the People's Democrats confessed to a lack of knowledge about the most recent issues in communications and referred the question to Vice-Chairwoman Ulla-Leena Alppi, who is more familiar with this issue. Alppi stated first of all that the SKDL [Finnish People's Democratic League] has not yet taken an official stand on the local radio plan. However, at the same time, Alppi pointed out that the SKDL supports the development of the Finnish Broadcasting Corporation's local activities since the activities of the Finnish Broadcasting Corporation come under parliamentary supervision.

#### State Radio Chief Comments

Helsinki UUSI SUOMI in Finnish 18 Jun 83 p 6

[Article by Martti Ristimäki: "500 Small Stations for Local Radio"]

[Text] Director Jouni Mykkanen of Radio 1 is giving the green light to local radio independent of the Finnish Broadcasting Corporation. In his opinion others than the Finnish Broadcasting Corporation can commence local radio operations.

"The radio waves are no longer as limited as before," states Mykkanen.

The world's radio waves will be redistributed in Geneva in the fall of 1984 at the International Conference of the High Speed Communications League.

"In my opinion Finland should propose five national radio networks and 500 small stations for its own share at the conference," proposes Mykkanen.

On the basis of Mykkanen's proposal the Finnish Broadcasting Corporation would use four of the national networks in the near future or the present Finnish- and Swedish-language radio channel as well as a new network for local radio stations as a fourth.

In expanding its local radio network the Finnish Broadcasting Corporation would thus cover the whole country with its own local stations and would completely fill this fourth nationwide radio channel.

In Mykkanen's opinion the small stations could very well be managed by someone other than the Finnish Broadcasting Corporation.

"There would be room for operations outside of the Finnish Broadcasting Corporation," he states.

Mykkanen considers that the Finnish Broadcasting Corporation must adapt to changes and allow local radio stations independent of itself.

Mykkanen assumes that the Finnish Broadcasting Corporation will take care of its own interests to the greatest degree possible and will not condemn other possible operators of radio stations.

#### Even Advertisements Would Be Permissible

Mykkanen, who belongs to the board of directors of the Finnish Broadcasting Corporation, is thus much more tolerant than the same company's general manager, Sakari Kiuru (Social Democrat). In Kiuru's opinion the Finnish Broadcasting Corporation could manage all local radio operations, and he does not support the idea of local radio stations independent of the Finnish Broadcasting Corporation.

In UUSI SUOMI's inquiry of the parties, only the SKDL adopted a negative stand toward private local radio stations.

Mykkanen also does not oppose radio advertisements as a means of funding local radio stations. In Kiuru's opinion advertisements would be undesirable.

"If the people are ready to approve of radio advertising as a price for this new alternative, advertisements are not any more objectionable than they are on television," proposes Mykkanen in expressing his opinion.

However, Mykkanen emphasizes that the question of local radio stations will be resolved by the political decisionmakers.

The same ethical regulations, and so on, would apply to local radio operations as to any other form of public media. In Mykkanen's opinion these operations could be supervised by temporary licensing, among other things.

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DGT TAKES MEASURES TO REDUCE COST OF OPTICAL FIBERS

Paris L'USINE NOUVELLE in French 2 Jun 83 pp 99-101

[Article by Philippe Douroux: "Optical Fibers: Industrialization"]

[Text] Better defined markets, equipment programs, marketing studies... French industrialists are up against the Americans, Japanese and Germans, and they are finally getting it together. However, one obstacle remains to be overcome before optical fibers replace copper wire: their cost.

In Milton-Keynes, Britain; in Migoshi-Ihome, Japan; and in Biarritz, France, industrialists and their administrations have invested large sums (Fr 500 million in Biarritz, \$35 million in Migoshi-Ihome) to build and test optical-fiber systems.

However, there is a fact that must not be obscured by these experimental networks: to build the cable systems that the PTT [Postal, Telephone and Telecommunications Service] has planned for France, 1.4 million homes hooked up by 1987, Fr 7 billion in investment), to make possible the development of optical-fiber industrial and computer linkages, and, especially, to conquer foreign markets (\$1.4 billion in 1986), the battle will have to be waged in coming years over the production costs of optical fibers and opto-electronic components (photoemitters, which transform electrical into light impulses, and photodetectors, which translate photons into electrons). The goal is to produce optical fibers and reliable components at the least cost.

French industry has an annual capacity of 50,000 kilometers of optical fibers but lags far behind the United States (250,000 km a year), Japan (150,000 km a year), and the FRG (100,000 km a year). To meet production and quality goals and to avoid playing second fiddle, French industry is nonetheless said to have three advantages: industry-government cooperation, which has been going on for 2 years; its know-how, and a Fr 7-billion market that is apt to attract initial investment.

Over a 2-year period, a large number of experiments and optical-fiber cable networks or hookups have emphasized the extreme interdependence between the administration and the optical-fiber industry. Unlike most of the markets that will be developing in France by the end of the century (biotechnology, robotics, microcomputers, industrial data processing, new materials, etc.), optoelectronics in the broad sense is characterized by the central place it gives to the public market (telecommunications, public and military videocommunications). In the medium run, these markets should account for 75 or even 80 percent of the whole market.

"Even if the administration and industry don't speak the same language," says one industrialist, "at least they have begun talking to each other, but they are really going to have to keep working at it." This dialogue may be fragile, difficult or laborious, but it does have the virtue of actually taking place and is an undeniable prime advantage for the future of fiber optics in France.

In 1981, the opto-electronics industry (the French optical fiber network) did not even exist: 95 percent of the equipment was yet to be developed. The optical fiber itself was being developed only in a few laboratories or by a few pioneering firms.

#### A Battle in Earnest Next Fall

In a 2-year period, an initial step has been taken toward industrialization with the appearance of the first networks conceived by TDF [French Television], industrialists or the PTT. With the Biarritz project, especially, which is by far the most ambitious (1,500 subscribers by the end of 1982, 15 television channels allocated, and access available to many data and image banks), everyone is learning a completely new profession. The experimental networks have been widely scoffed at because of their cost. They have been set up by Portenseigne (a Philips subsidiary) in Aste-Beon, Pyrenees-Atlantiques; by Tonna Electronics (a small company with 50 full-time employees) in Valbonne, Alpes-Maritimes; at the Sophia-Antipolis site, in Haute Savoie by the Lyonesse Optical Transmission Company (CLTO) and Viscodis, subsidiaries of the General Electric Company. These systems will have yet made it possible for business and administrations to acquire expertise.

From a purely industrial point of view, the 10,000 km of optical fibers drawn for the Biarritz network will have made it possible for Optical Fiber Industries (FOI), a subsidiary of Thomson, the Saint-Gobain Company and the U.S. company Corning Glass Works, to divide by three the cost of a meter of index-gradient optical fiber and bring the cost down to Fr 2 a meter at present.

This is an appreciable gain and has been made possible by better control of the delicate process of forming the glass ingot and drawing it to obtain a uniform fiber in terms of mechanical reliability, attenuation and centering (50  $\mu$ m). Likewise, Socapex and Souriau, working in liaison with the PTT and SAT [Telecommunications Corporation], the main contractor in Biarritz, but also Radiall or AMP [Precision Mechanical Works?] have been able to develop and test new connectors whose loss or attenuation has been reduced from 3 dB to 0.5 dB. Opto-electronic components are the last link in the chain and have experienced a definite delay.

Actually, for CIT-Alcatel and RTC [Compelec Radiotechnology] (a Philips subsidiary), as for Europe Optronics, a joint subsidiary of SAT and the U.S. firm General Optronics, of Boston, or for Thomson, the real battle will be joined only beginning next fall. That will be when the General Directorate of Telecommunications (DGT) will submit to industry the first orders for the installation of optical-fiber cable networks. At that time, a decision will have to be made about the different technical solutions proposed last 18 April by 6 industrial groups and completed on 18 July by the presentation of 10 working models.

#### DGT's Program: A Decisive Advantage for the Industry

For the time being, the industry is biding its time: will DGT opt for diode lasers? These are powerful but expensive and unreliable (an average of 10,000 hours of life) and will be dependent on 50  $\mu$ m-diameter fibers. Or will it go for a solution that

may be technically less "elegant" but is less expensive and more reliable? This method would use conventional electroluminescent diodes (with an average life of about 100,000 hours) and 85- $\mu$ m fibers. Industry leaders are waiting for administration decisions before investing the Fr 36 million considered necessary to produce the terminal components alone.

In the future, the program developed by DGT and adopted by the government last November should be a definite advantage to the industry.

The 4-year market program for local networks already makes it possible for industry leaders to look forward to a large reduction in the cost of fibers, connectors and components. The cost of fibers should thus fall from Fr 2 a meter to Fr 0.5. The price of connectors for videocommunications could be brought down from Fr 160 to Fr 70 a unit. And the cost of a germanium photodetector could come down from its present Fr 700 to Fr 55 or even 45. The price of a laser photoemitter would fall from Fr 15,000 to Fr 300.

#### Copper Wire is Threatened Everywhere

In the long run, such a cost slide makes it possible to foresee a real take-off of optical-fiber industrial and computer linkages. Fibers will become economical as they become impervious to static and capable of transmitting heavy data loads at high speeds. Copper wire may be on its way out everywhere.

Internationally, the French opto-electronic and optical-fiber market will account for only 7.1 percent of the world market by 1986, at \$106 million. The Japanese firms of Sumitomo, Fujitsu, and Fukukawa Electric can count on a domestic market of \$165 million and have now decided to enter foreign markets.

NEC [expansion unknown] has optical-fiber connections between 60 telephone exchanges in Buenos Aires, and Fujitsu has extended the Hong Kong telephone network; they are considered the first large international contracts.

The Japanese are devoting only 7 percent of their fiber production to domestic use; they are thus affirming their ambition and forcing French industrialists to look beyond the PTT program.

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CSO: 5500/2722

TRANSPAC TO INVEST FR 2 BILLION BY 1990

Paris LES ECHOS in French 6 Jun 83 p 6

[Article by V.L.: "Telecommunications: Fr 2 Billion to Expand TRANSPAC"]

[Text] "Success for TRANSPAC!" That was one of the priority objectives set by Simon Nora and Alain Minc in their 1978 report on the company's data processing. Five years later, the goal has been achieved, at least in part. The price of success has been that hookup time has become much too long: more than 6 months for the PME [small and medium-sized businesses], particularly in the Nice region, where they are heavy users of "package switching."

True, the French "X-25" switchboard has been adopted by 20 countries around the world, and more than 10,400 direct hookups are already in service in more than 20,000 French towns. To these should be added more than a thousand hookups through telephone and telex networks. But the hardest remains to be done. Ambitious plans are being made to join the large worldwide data-processing transmission networks.

Ten thousand subscribers will become 30,000 and then 50,000 and reach 100,000 by 1990, the horizon of the foreseeable future. By then Fr 2 billion will have been invested, with Fr 300 million invested by 1983.

Louis Mexandeau issued a warning at the ceremony for the 10,000th subscriber. The wealthy DGT (General Directorate of Telecommunications) can no longer be called upon for financing. TRANSPAC will have to find out how to finance almost all its investments by itself.

Yvon Lebars, the president and general director of TRANSPAC is already somewhat overwhelmed by its current success, but he is well aware of the difficulties to be overcome in a phase of exponential growth; the turnover has increased 7-fold in 4 years and should jump from Fr 150 million in 1982 to Fr 1 billion by 1986.

TRANSPAC is also involved in new telematic services and has a fine future ahead of it in participation in the Saint-Etienne sales terminals experiment or the Teletel professional transportation network, teletex, electronic messaging or telecopying. The field is immense, but competition will be stiff. The Telecom I satellite and the "switched" telephone network will soon be available to help transmit computer data. They have very high capacity and a long lead over TRANSPAC for high-quantity processing.

Louis Mexandeau will soon celebrate the 100,000th telex hookup and the 20 millionth telephone subscriber, but he insists of letting people know that he is keeping a weather eye open. While videocommunication and audiovisual broadcasting to the general public seem to be his pet projects at present along with a real push in video graphics, he has nonetheless not forgotten the professional sector.

"The ministry of PTT [Postal, Telephone and Telecommunications Services] will be increasingly involved in the development of business networks and the vast sector of professional communication equipment. Businessmen are on notice."

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CSO: 5500/2722



TELECOMMUNICATIONS FIRMS WORRIED ABOUT ATT DIVERSIFICATION

Paris LE NOUVEL ECONOMISTE in French 9 May 83 p 63

[Article by Anne-Marie Rocco: "The French Worry About the ATT Offensive"]

[Excerpts] A country of 800 million people without a telephone system! But, unfortunately, also without dollars. During a visit to China last month, ATT [American Telephone & Telegraph] President Charles L. Brown could not help musing about a "Bell System" that might one day link Beijing and Chungking. ATT is out drumming up business on all continents, and this is affecting the strategy of its European competitors.

The end of a monopoly means greater freedom of action; ATT will not lose out in the settlement that has put an end to 13 years of a cumbersome antitrust suit. Beginning next 1 January, the world telecommunications champion will no longer control the 22 subsidiaries that manage 80 percent of the American telephone network through the "Bell System." These companies will be independent and will no longer depend exclusively on Western Electric--ATT's industrial subsidiary--for the purchase of telephone exchanges or transmission equipment.

Up and coming American or foreign rivals are already seeking to move into the opening. Such a one is the French CIT-Alcatel, which brought its first American telephone exchange on line on 25 April and is expecting to start up production soon in the United States.

In 1975, when ATT began to prepare for its return to the international market, the American company had no bridgehead outside the United States. Even now it has only 14 sales offices outside the country. However, they have had some success: a consulting contract in Puerto Rico, the construction of transmission towers in Saudi Arabia, the delivery of telephone exchanges to Egypt, Korea and Taiwan, and laying an undersea cable between Greece and Egypt. But it has made no special inroads on the European market.

ATT strategists initially hoped to remedy the situation by taking over Telectron, an Irish company also coveted by the French CIT-Alcatel. It was a disappointing operation that soon saw the closing of one of Telectron's three factories. ATT's policy is now much more ambitious and is based on an association with the Dutch company, Philips. The constitution of a joint subsidiary for

production and sales in Europe was decided on in principle last January. The definitive agreement was to be signed on 30 April but was recently delayed a month because Philips wanted to include the field of transmissions in it. However, the start-up of the joint subsidiary is planned for this fall.

Almost

European interests seem to be taking a beating. Mr Georges Pebereau, general director of CIT-Alcatel (CGE group [General Electricity Co.], was downcast when the U.S.-Dutch agreement was announced. He has been trying to make a deal with Philips since 1979, when an association was almost formed. The purpose is to share the costs of developing new-generation telephone exchanges--\$150-200 million a year--and also to compete with ATT on the international market.

Will he have to strike the project? In December, CIT-Alcatel concluded a wide-ranging agreement with Philips on the cellular telephone, a wireless telephone that a user can carry with him anywhere. This market might affect 15 million European subscribers by 1990; to move into the market, Philips will bring to bear its expertise in radio transmissions and CIT-Alcatel, its experience in switching. A joint subsidiary would produce and sell throughout the world a system developed by the two partners.

Even as the government is asking Thomson and CIT-Alcatel to set up a French research group, CIT still seems to be giving preference to its international allies. Mr Pebereau may still be secretly hoping to change the Eindhoven giant's mind by his slow and easy policy toward Philips. In an extreme case, it may even come down to acting as a third party in negotiations with ATT. After all, didn't Mr Wisse Dekker, president and general manager of Philips, say that the agreement did not exclude cooperation with European partners?

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CSO: 5500/2722

## REPORT SHOWS LACK OF RESOURCES TO TRAIN INFORMATION SPECIALISTS

Paris L'USINE NOUVELLE in French 2 Jun 83 p 288

[Editorial by Robert Clarke: "Information Training: an Alarm"]

[Text] It is surprising to note that while everybody is aware of the important changes that will be wrought by the technological evolution we are experiencing, few serious studies have been done that will give us a clear idea of the actual impact it will have on, for example, the development of data processing in industry a few years from now. True, it will have taken barely five generations to move from an agrarian to a computer society in Europe and America. Even if we credit man with the greatest cultural adaptability possible--and man has shown time and again that he has it--that evolution is simply much too rapid. People really master only what they learn at school or, as a child, at home. We are now at a strange point in history where young people are teaching their elders what they must know and do in order to live in their own time.

A recent OECD report on evaluating the social impact of technology emphasizes the fact that the industrialized nations are relying on the future to solve their problems--some of which are the consequence of new technological development--by calling upon increasingly complex technologies and basing their strategy on innovation. This means there is a widening gap between developments on the cutting edge and society's ability to bring them into harmony with human and social ends.

One of the consequences of this imbalance involves the problems of employment. Dennis Chamot, of the U.S. American Federation of Labor recently said, "The computer revolution will leave no kind of work unchanged." Faced with this problem, some people take a hard-nosed attitude: "When the horse was replaced by the machine," says Vassiliy Leontev of New York University's Economic Analysis Institute, "nobody said new jobs had to be found for the horses." Others try to remain optimistic by saying that the labor market won't be hurt so much because nations have deliberately opted for permanent control of the dynamics of the new technologies.

Another source of concern is the training of men and women who will be making direct use of recent technologies. In this context, the generation gap that is found within families is quite naturally reflected in training, where adaptation is just as slow. The recent report made by a university professor, Maurice Nivat, to the ministers of Industry and Education is particularly informative on this subject.

It really sounds an alarm. It examines the situation at all levels, both research and specialist training--not to mention the average computer user, namely the large mass of those who willy-nilly find themselves sitting at a terminal wondering what to do next.

At any level we seem to be really behind the times. The university has neither the personnel nor the means to train the specialists needed. Maurice Nivat even says that obscure American universities unheard of in France have training facilities ten times better than those in French universities claiming to specialize in training computer technicians. Students who are theoretically the best, the ones who have a master's in data processing, have little more than 50 hours of hands-on experience at a terminal. Even at the Polytechnic Normal School, the students who have the most opportunity of using a computer in their careers have only introductory training that the author of the report considers insufficient: a few dozen hours--with outdated programs.

What about those who do not have the opportunity to go to a university or one of the elite schools? What can they do if they want to learn data processing? Private courses are available, but their ineffectiveness and pretensions are here again denounced: "Become a programmer in one month." This kind of advertising was all too frequent a short while ago, but traces remain even though it is on the way out. Maurice Nivat says that too many people think that data processing is something you can pick up quickly when you need to once you've gotten your diploma. He shows that it's not true. It has to be learned with just as much care as any other discipline, and it takes as much time.

The report makes a concrete proposal: open more pathways of communication between research and industry in the field of data processing, e.g. by giving the same training to students who will become engineers and those who want to become researchers. The theses could be jointly directed by a teacher-researcher and an engineer and could be done--as is the case in Japan--in an industrial setting. There is a clear and practical proposal for the well-known association of research and industrial practice, an association that has been much discussed but has produced few results.

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CSO: 5500/2722

MEXANDEAU ON PTT'S ROLE IN TELECOMMUNICATIONS INDUSTRY

Paris L'USINE NOUVELLE in French 16 Jun 83 pp 94-98

[Interview with Louis Mexandeau, minister of Posts and Telecommunications [PTT] and minister-delegate to the Industry ministry, by Jacques Barraux, Marc Chabreuil, and Rene Le Moal: "The PTT in the Electronics Network"; date and place of interview not given; passages in slantlines are emphasized in the text]

[Text] What will the consequences be of the rapprochement between the ministries of Industry and PTT on the future of the electronics network? Is there still "imperialism by the DGT" [General Directorate of Telecommunications]? Why is the PTT increasingly interested in office information systems? How will the CGCT [General Telephone Construction Company] soap opera come out? What is the meaning of Farnoux's mission to the United States? Louis Mexandeau, minister-delegate to the ministry of Industry and minister of the PTT, explains how he conceives of his department's role in industrial policy.

L'USINE NOUVELLE: For two and a half months, the PTT ministry has been under the wing of a considerably strengthened ministry of Industry and Research. How do you interpret this change in ministerial structure?

Louis Mexandeau: The rapprochement of the PTT and Industry ministries is the result of a plan that was submitted for consideration more than a year ago. It is a direct descendant of Abel Farnoux's report on the electronics network.

Only about 10 years ago, we French realized that the PTT was becoming one of the linchpins of the French electronics industry through government purchasing and use of the telephone network. Look at how far we have come: before WW II, the French telephone system was built partly with foreign lead-insulated material. A French telephone industry has been built gradually with a policy of government purchasing.

This industry has now acquired international standing, and its influence has spread far beyond the telephone alone. While an industry like office information systems is running a trade deficit of Fr 3.5 billion, telecommunications have registered Fr 2 billion in surplus. The attachment of PTT to the Industry ministry is the indirect result of this successful industrial reconquest. It means that the telecommunications administration has a direct role to play in electronics communication strategy.

[Question] Won't that encourage a kind of "imperialistic" behavior on the part of the DGT--the General Directorate of Telecommunications--headed by Jacques Don-doux, the successor of Gerard Thery?

[Answer] Let's not mix up things that are entirely different. Electronics industrial policy is solely under the Industry ministry, mainly through the DIELI, the Directorate of Electronic and Data-Processing Industries. The PTT ministry is keeping its autonomy. Its scope of operations is strictly delineated. It has never attempted to go beyond those limits. But it is a fact that technological change have naturally brought the government to plan for a revision of the boundaries between the different electronics sectors.

[Question] What, then, are these new boundaries for your service?

[Answer] The PTT has hitherto devoted itself to the adventure of the telephone. The president of the Republic recently celebrated the 20 millionth subscriber to the public telephone system. It was an important step. The time of massive investment in telephone switching and transmission is coming to an end. But we are entering a completely new phase in the development of telecommunications. A new mission statement has been drawn up. It is set forth in its entirety in the document "Telecommunications Management Charter."

[Question] What does this charter consist of?

[Answer] It is a detailed planning contract that mainly provides for investment between now and 1987. The annual general program authorization will average Fr 27 million in 1982-value francs. Considering monetary drift, 1983 investment should come to more than Fr 30 billion. The budget may also be supplemented by drawing on reserve funds provided by the charter. This reserve fund has been formed with Fr 3 billion taken from the DGT operating account. The use of reserve funds thus provided the government will be decided upon in an agreement to be negotiated every year between the ministries of the PTT, Industry and Economy and Finance.

[Question] What will you do with the money?

[Answer] In general, three things:

[1] /Continue supplying the country with telephones./

Despite the slowdown in orders for telephone exchanges, the telephone adventure is not over. Between now and 1990, France may have 30 million subscribers. We must therefore plan for 10 million more installations in addition to continuing renewals. Also, this country has a considerable way to go to catch up in the area of private telephones and business communications. There is an important opening for engineers.

[2] /Develop the many applications of computer communications./

The new growth in the electronics industries will follow this trend, in part. The telecommunications charter especially stresses the Minitel videotex program. Some 600,000 terminals have already been ordered for CIT-Alcatel, MATRA [Mechanics, Aviation and Traction Co.] and TRT [Telecommunications, Radioelectricity, Telephone]. The objective is to install 3 million Minitels by the end of 1986. That is a very short time.

[3] /Launch the first phase of the program to build optical-fiber cable networks, which was decided in November 1982./

The PTT is entirely responsible for this immense undertaking, which will extend over a 15-year period. DGT will be working in cooperation with TDF [French Television] and will order 100,000-odd hookups for the new cable network by the end of this year.

[Question] Some industrialists seem to doubt the short-term feasibility of the optical-fiber network. The technology that has been chosen--the most difficult and futuristic--seems much less operational than coaxial cable. Isn't it too risky?

[Answer] We started consultation with industry leaders at the beginning of the year. The proposals are being examined. It must be understood that we are now in a 3-year transition period. This period must be used to best advantage to perfect optical fibers and their related equipment. We will be allocating Fr 500 million a year to research and development, and we will be satisfied to have first-generation equipment to begin with. The second generation will be begun when we have completely mastered the technology selected.

Just as CNET [National Center for Telecommunications Studies] played a prime role in bringing about earth-based switching and telematics, it will also lend a hand industrialists in their development efforts. The real problem for cable networks will lie elsewhere, in programming.

[Question] Let's put aside the Telecommunications Management Charter and take up the electronic network as a whole. How do you plan to help strengthen it?

[Answer] Our experience is in both methods and products. We can bring know-how to the management of public purchasing in state-industry and industry-research relations. We can participate in achieving industrial objectives for export or strengthening the fiber of innovative PMI [small and medium-sized businesses]. And we can prepare for the production of technology destined to have a great commercial future.

[Question] Which, for example?

[Answer] The most interesting example at present is probably the memory card. The CNET is very well placed internationally in this area, because it is a French invention. The memory card promises to have many uses. One of its most promising areas of use, however, is in small-change operations. At a time when vandalism seems to be concentrating on telephone booths, parking meters and vending machines, it will be a decisive step forward to do away with coin payments.

The memory card is easy to use and will certainly revolutionize the system of small payments and will do away with coinage. To buy a newspaper, use a public telephone, pay road tolls or buy stamps, daily life should be made a lot easier.

But if this card is to come into early use, those who are responsible for banking legislation will have to begin to think about its implications; they will have to admit, in particular, that the memory card--unlike the credit card--does not require an exchange of information with the person issuing the sign of money. The memory card's liberating value will be felt immediately; it will be the beginning of a new means of cash payment.

[Question] How do you expect to help it get started?

[Answer] There again is the lever of government purchasing. There are at present 150,000 public telephones in France. We are negotiating a multi-year order for 50,000 card tellers. This order will not be any one-shot affair. Our way is to negotiate long-term programs with business in order to stabilize them and cut costs.

[Question] The telecommunications administration seems to be very concerned that French telematics succeed in the United States. What role do you expect to play in this area?

[Answer] We have been thinking in terms of market shares. France is now in 4th place worldwide in electronics. But 4th place gives us only 5 percent of the world market and only 0.3 percent of the American market, which alone accounts for 47 percent of the world market. These few figures show that French business has a pressing obligation to compete in this pilot market. Whoever succeeds on the North American continent has every chance of succeeding in the rest of the world.

The United States is also a much more profitable training ground than Japan to the extent that it is particularly dominant in high technology and data processing services (56 percent of the world market).

France can take pride in an admitted lead in the field of telematics; we must make a great prospecting effort in the United States. Videotex is one of the flagship products of this offensive.

The PTT and Industry ministry recently gave Abel Farnoux the mission of taking an inventory of the distribution channels that French businessmen should use. It also analyzes which French products will have a chance on the local market once they are adapted to American standards.

[Question] It has been said that the Farnoux mission might eventually create a permanent aid structure to French business. What is the truth about this?

[Answer] In no way is the DGT seeking to set itself up as the patron of a French advisory and assistance organization for businessmen who want to succeed in the United States; such an organization must certainly remain a private one. However, business will benefit anyway from the DGT's indirect aid to the extent that its international image is very strong.

[Question] The French offensive in the United States has not been very large so far. To what do you ascribe this slow start?



[Answer] It is due to industrialists' realizing too late that they had to form joint ventures. To keep a foothold in the United States, you have to do the work on the spot and take part in a business. There are candidates for joint ventures in the United States. For the memory card, the electronic telephone directory and software, France's future in the United States depends on its acquiring local partners. The Farnoux mission is a response to that concern.

[Question] You have talked a lot about the future of French telematics in the United States. But doesn't this industry still have a chance on the large telephone equipment markets of young nations?

[Answer] Of course there is no way we can let big contracts go. The PTT label is an excellent calling card for French businessmen, and they have every interest in stepping up the pace. But it is also true that large contracts are often tied in with political considerations, and they cannot serve as an exclusive basis for a policy of international development.

Rather than risk everything on very large conventional operations involving a small number of our producers, we want to increase as much as possible the range of exportable French products. The more products we have to sell, and the more salesmen we have in flight, the less we have to fear from a contract cancellation. Productive growth will come from diversification and our support for highly innovative PMI. The DAI's [Directorate of Industrial and International Affairs] consultations on new products for telematics and office information systems are exemplary in this respect. They are intended to strengthen the industrial fabric and create new opportunities for export. That is our most active participation in national industrial policy.

[Question] The PTT therefore remains more hostile than ever to a French-Telephone type structure that would tend to concentrate radically the industrial strength of their suppliers?

[Answer] The principle of competition has always been vigorously defended by the French telecommunications administration.

[Question] In this context, how is the future of the CGCT being negotiated?

[Answer] In a few days, the CGCT president and general director, Pierre Lestrade, will present his proposals for restructuring. The objective is to avoid dismantling the business while enabling it to negotiate a general agreement with one of the two big telephone companies. A general agreement with one of the two companies still does not exclude the possibility of an alliance with a third party in the area of private hookups or terminals. But this third party will be preferably one of the sector's middleweights (and not the "other" of the two big companies).

[Question] In public networks (earth-based electronic switching), doesn't the balance of power between Thomson and the CGE risk being broken if the CGCT merges with the uncontested leader, the CGE?

[Answer] Whatever solution is decided upon, the proportion of government purchasing between CGE and Thomson will always remain 60-40. That is as it should be. The CGCT's final choice is therefore open, and it depends exclusively on industrial and social considerations.

[Question] Have you been reassured about Thomson's ability to master earth-based switching technology?

[Answer] This concern partly explains the delay in solving the CGCT problem. But we are now completely reassured about Thomson's MT.system.

[Question] Who are your suppliers at present?

[Answer] Besides Thomson, CIT-Alcatel and a hundred PMI, we are following developments closely in 3 categories of business:

[1] Those who have gone into telephone work without being pushed into it by DGT. This is the case especially with Jeumont-Schneider, which is now participating fully in sector development.

[2] New electronics companies that have moved into the field with encouragement from our administration. Except for Thomson (which got into telephones at the urging of Paul Richard in the 1970's), the firms involved are Matra, ESD [Serge Dassault Electronics], Crouzet, Bull and numerous SSCI [data processing service and consulting companies]. The results have been uneven. But we do not want them to be sorry they diversified into telephones.

[3] The conventional businesses of the industry, which have had problems with conversion after the slowdown in large purchasing orders in the area of transmission (Lyons Cables, Thomson-CSF [General Radio Company] and LTT [Telephone and Telegraph Line], SAT-Sagem [Telecommunications Corporation] Silec, TRT, and AOIP [Association of Precision Instrument Workers]. They are also turning to new products in telematics, business communications and video communications.

In sum, the PTT counts most of the time on a base of 8-10 potential suppliers, each with its own specialty; it does not rely solely on two, as some people have concluded a bit hastily.

[Question] Is it possible that the PTT's participation in electronics development will go so far as to include direct financing when there is not the least connection between the business activity and public service?

[Answer] CNET research obviously has a lot of spinoffs outside of the PTT's areas of responsibility. And the DGT's knowledge, which was acquired before and after it got into telecommunications, may now play a key role in the development of components, office information systems and software. All the world electronics giants are tempted by the integration of data processing, telecommunications and office information systems. The problems of regulations and commercial networks is getting ever more complex. French businessmen will have every advantage in relying on us when they deem it useful.

In certain cases, where companies are moving into or back into domestic and foreign markets, the PTT can even volunteer to play a pilot role. This is the case with videodiscs, which will be developed considerably through computer communications and image banks.

The absence of pressing factories in France could have had very bad consequences for mastering that particular technology. A decision has just been made to build such a factory under an agreement with the ministry of Culture. The PTT will be the pilot for this operation, which will be financed with government funds.

[Question] Might the PTT facilitate international agreements between engineering contractors?

[Answer] As you know, the government is actively pushing for the formation of a European electronics pole that is able to free itself from its double domination by Japan and the United States. This concern is shared by industrialists in Germany and Italy. The case of the Dutch company, Philips--which is being tempted by a world-scale strategy--is more difficult to judge. But all my efforts will involve an increase in joint action.

This is the case particularly in large systems, whose development cost is very large (15-20 percent of company turnover); the only way to maintain two suppliers in France in the long run is to have each of them join a European group. I am thinking particularly about earth-based switching (large public exchanges, and cellular systems for automobile radiotelephones).

Our sales push on the international scene requires that we check out concretely and rapidly all possible European groupings that have the will to succeed.

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PTT industrial policy is implemented through the General Directorate of Telecommunications, the DGT, which is headed by Jacques Dondoux, age 52, a Polytechnic graduate and telecommunications engineer, who succeeded Gerard Thery in August 1981.

The DGT is a complex mixture of government administration and industrial group. It has a monopoly on transmissions (telephones and new computer communications services); it manages the national telecommunications network but does not have the right to produce or give out information. Its total staff exceeds 150,000.

With about Fr 30 billion in investments in 1983, the DGT is the primary government purchaser. It alone accounts for more than a third of the national government's civilian purchasing. Some 95 percent of its receipts come from telephone subscribers (its cash flow is greater than that of Elf-Aquitaine). The telecommunications surplus in 1982 was Fr 4.7 billion (but the postal service had a deficit of Fr 2 billion). In 1982 and 1983, the government helped itself on a "one-time only" basis to a slice of its profits, the money being transferred to the general fund of the national government.

Through its purchasing, the DGT accounts for more than half of the turnover of 130-odd companies involved in telecommunications. It is also the primary government purchaser of high-powered computers. Every year it allocates Fr 2-3 billion in research and development credits for new products. It thus has both direct and indirect leverage on companies in the industry, and this is strengthened by the CNET's technological capacity, which is under its control. The DGT also finances in part the Data Processing Agency, and it controls Jean-Jacques Servan-Schriber's CESTA (World Center for the Development of Social Uses for Microcomputers).

The DGT's industrial policy is implemented essentially through the DAI, the Directorate of Industrial and International Affairs. It was formerly headed by Jean-Pierre Souviron and then by Jean Syrota; the DAI is presently headed by Henry Bustarret. The DAI selects suppliers for the PTT, oversees research and development contracts, and initiates consultations on new products.

But the DGT is especially powerful because it has its own industrial domain. It controls a network of private businesses operating both in France and abroad. This industrial group was considerably strengthened by Gerard Thery in his time, and it retained its essential privileges after May 1981 (no parliament oversight of its activities). The linchpin on the DGT's industrial sector is the France Cables and Radio company. [FCR]. The FCR is very diversified, as it works with undersea cables, satellite telecommunications, switching, computer communications, etc. It has many subsidiaries, especially Telesystems (computer communications) and the EGT (General Telecommunications Company, which sells telephone-answering machines and radiotelephones). The FCR group is also responsible for selling Telecom I satellite services.

As new computer communication modes are developed, the DGT is setting up private firms. This trend increased its rate again beginning in 1978 with the creation of the TRANSPAC company (Fr 250 million turnover in 1983 in transmitting computer data).

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CSO: 5500/2736

TELECOMMUNICATIONS AGENCY TO EXPAND DATA COMMUNICATIONS NET

Stockholm 7 DAGAR in Swedish 1 Jul 83 pp 30-32

[Article by Ville Carlstrom]

[Text] In spite of a recent rate increase on telephone calls and annual profits of over 2 billion kronor--though "only" 1.8 billion this year--the Telecommunications Agency intends to borrow money in the future. The reason is increasing business demand for expansion of the data network.

It is the day before Midsummer Eve. The rush hour in Stockholm is just beginning and a hopeful line has formed in front of the state liquor store.

About 40 people have crowded into a small conference room on an upper floor of the Telecommunications Agency's new customer center on Kungsgatan 36. The group consists mainly of men carrying briefcases; there are very few women. The telecommunications directors of Sweden have been brought together to discuss the Telecommunications Agency's new role as a "market-adapted service company" with technical representatives. It has been decided to "wipe out the stamp of the authorities."

The Telecommunications Agency now regards itself as a company, a service company. One of the telecommunications directors says that he has received almost 1,000 suggestions from his employees on changes.

The meeting ends with a pictorial presentation of the future of telecommunications. At around 3:30, they pick up their briefcases and go home.

The background for the meeting is the intensive information campaign that has been going on during the past year to make employees "aware" of the new role of telecommunications in the private business sector. It is primarily the development in data, text and pictorial communication that has led the Telecommunications Agency to sharpen its claws.

Staff Doubled

The key role in the current change in the agency is held by the market division, which doubled its staff on 1 March from 150 to 300 people. Around 150 technicians were added to the division for rationalization purposes.

"An important reason was so that technicians and marketing people could work more directly together. We no longer have time to send memos around between divisions," said assistant marketing director Berne Landgren.

In February the marketing division came up with pictorial material for use in "educating" personnel--170 copies each of a video cassette and a poster. The material is used by chiefs at the local level in contacts with employees.

The pictorial material has also been gathered into a small pamphlet with the title, "Take the Plunge"--and by that is meant the first step into the uncertain future.

The pamphlet describes "threats" to the Telecommunications Agency and what workers can do to counteract them.

One of the threats is digital electronics, which forces national telecommunications authorities to compete with multinational data companies. The number of sets that can be hooked up to the telecommunications network is growing and this blurs the borderline between monopolies and free competition. The result in Great Britain has been that the telecommunications monopoly was loosened up for the benefit of private companies.

One of the agency's "weapons" for combatting competition in the data area, for example, is described in the following way:

"A quick way of adding customers in new areas is to bring in specialists from outside. But it has been noticed that some of us are somewhat uneasy about the 'outsiders.' Don't be! They will seem more human as time goes by. Be generous! Open your door."

Telecommunications workers must now learn such expressions as "debureaucratization," "development" and "punctuality" (with delivery times, among other things).

Courses have also been set up for employees in contact with customers. So far they have used the courses SAS personnel take, but in the fall the Telecommunications Agency expects to have its own courses in "Being nice to the customers--we sell more that way."

#### Must Speak Up

Advertising is an important part of the Telecommunications Agency's new commercial inclination. The agency's general director, Tony Hagstrom, commented on advertising last winter in the agency's staff paper, VERKET OCH VI:

"In our kind of society, advertising is a way of providing information. We must speak up in order to get through all the other information. It is

ultimately a question of the same money--household spending. If we are to invest in further development, we must have money."

The Telecommunications Agency uses around 20 million kronor a year to induce Swedes to make more phone calls. Widespread poster campaigns urge people to get together by phone. "Calling up is a way of being together" is one of the slogans being drummed into the consumers.

For although data development is progressing like a steamroller, the big money still comes in from the telephone network. Of the agency's sales of roughly 10 billion kronor, the telephone system accounts for 85 percent and it is estimated that telephone conversations are increasing by 3 to 4 percent a year. No one really knows why. Perhaps the ads have had an effect.

"Advertising campaigns are one way of convincing people that they can save time and money by calling up. Instead of driving to the store for some things, one can call up. It is cheaper," said Berne Landgren.

But although telephone calls now account for most of the Telecommunications Agency's revenues, that picture will change. Data, text and pictorial communications will take up an increasingly large share of the telecommunications network in the future and that will require big investments on the part of the Telecommunications Agency.

#### Cannot Borrow Money

The agency already invests almost 5 billion kronor a year, making it one of the largest investors in the Nordic region. The replacement of telephone stations and the modernization of the telephone network require enormous sums of money.

And here the agency has an economic problem, which sounds quite paradoxical. As a state agency, it is not allowed to borrow money. The agency must scrape together the 5 billion kronor it needs each year from telephone rates. That works in the current situation, but it will not in the future, according to economic director Sven-Roland Letzen:

#### Business Demand

"We have asked state authorities to be allowed to borrow money in one way or another so that we can increase our rate of investment and invest even more."

The background is increasing business demands for rapid communications along with the rise in computerization. Big firms such as Asea, Electrolux and Volvo are currently negotiating with the Telecommunications Agency on the possibilities of expanding the telecommunications network to meet the rising data needs. In just 4 years, it is estimated that the number of data hook-ups to the telecommunications network have doubled.

What they want to do now is introduce a so-called "broad-band network" for data communications on the telecommunications network. With such a network, the speed of data communications would increase considerably and this would benefit subcontractors as well as the large companies.

But good things cost money.

To handle the investments, the Telecommunications Agency will have to put in around 6 billion kronor a year. That money does not exist today. In this situation, there are really only three alternatives:

One is to borrow money from the state or on the market (from banks, etc.).

Another is to raise telephone rates even more.

The third is to refrain from increasing investments and to keep going as before.

"We will probably not find out whether we will be allowed to borrow money or not until early next year," said Sven-Roland Letzen, who did not want to talk about the Telecommunications Agency's future investment needs.

"It is still so uncertain."

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CSO: 5500/2747



TELE-X IN OPERATION SEEN AS BOON TO COMMUNICATIONS INDUSTRY

Stockholm SVENSKA DAGBLADET in Swedish 30 Jun 83 p 6

[Article by Lars Hellerstedt]

[Text] A definitive contract on the Nordic satellite, Tele-X, will be signed on 10 July in Stockholm.

The contract will involve an economic risk venture in the billions of kronor. Several hundred million kronor will go to Swedish industry.

Through Tele-X, the Ericsson company will be able to test a unique system for data traffic that could open up a world market for a Swedish invention, the news agency TT reported.

With the satellite, picture and sound can be sent over the entire Nordic region at a low cost. Without complicated cable systems, entire newspapers can be transmitted to various places for printing. Companies can easily connect affiliates with data in the main office and TV will not have to send out heavy equipment in order to make direct broadcasts of events in isolated areas. Nordic TV programs can be directly transmitted to out-of-the-way places without stations.

Tele-X will cost 650 million kronor in 1982 money for the satellite alone. Sweden will pay 85 percent, or roughly 550 million. Norway will pay the rest.

Launching the satellite will cost 285 million kronor. A control station for the satellite is being built in Kiruna at a cost of 75 million kronor.

The total amount of these basic investments will be around 1 billion kronor.

The contract, which the Swedish space agency will sign, is primarily divided into orders to France, Sweden and West Germany, with each getting a third of the satellite. Norway will get only a small share amounting to around 5 million kronor.

The satellite will be assembled in Cannes. The shell of the Tele-X will be produced by Saab in Linkoping.

An industrial group formed by Sweden-Norway, West Germany and France will have the major responsibility for the satellite.

Tele-X will be launched in space in 1986 from French Guayana, near Devil's Island in the South Atlantic. Two communications satellites were launched successfully there a few weeks ago.

The control station in Kiruna will maneuver Tele-X in its planned orbit for at least 7 years.

The manufacturing firms got off to a head start with Tele-X. Planning started last summer.

There will be three TV channels on the Tele-X, two in operation and one in reserve. When a political decision is made, a TV program, for example pay TV, can be sent over the entire Nordic region to receivers who need only a 60-cm antenna below Tele-X and a 90-cm antenna in locations on the fringe of the satellite's action radius.

Tele-X is experimental. It can receive and transmit with very small antenna resources. There will be great opportunities for businesses, universities, banks, newspapers, etc. to use Tele-X cheaply.

Currently, sending data by satellite costs an average of 10 million kronor per receiver and requires an antenna 2.5 meters high.

Ericsson has its own design for data transmission which calls for 60-cm antennas and receivers costing around 1 million kronor. In other words, the cost will be reduced by 90 percent.

If Ericsson's system works, a world market will open up for the development of cheap data transmission.

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